

Estudio de la epidemiología y outcome del PCR en pediatría fuera del hospital



Ida Concha Murray
Instructor asociado departamento
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A Prospective, Population-Based Study of the Epidemiology and Outcome of Out-of-Hospital Pediatric Cardiopulmonary Arrest

Kelly D. Young, MD, MS*†§; Marianne Gausche-Hill, MD†§||¶; Christian D. McClung, MD, MPhil#**; and
Roger J. Lewis, MD, PhD†§||

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Análisis secundario de un estudio realizado entre 1994-1997 en 2 grandes zonas de California (JAMA 2000;283:783-90) en < 12 años o 40 kg

- Sobrevida al alta del hospital
- Perfil demográfico
- Etiología del PCR
- Ritmo del paro
- outcome neurológico

Literatura del Outcome del PCR en niños

- series limitadas a pocos casos retrospectivos
- falta de uniformidad en criterios de definición de casos
- Criterio de Utstein desde 1995 para reportar toda la información en forma uniforme.

Método

- Análisis 2° de un estudio 1994-1997
- Estudio controlado, clínico, sobre manejo de la vía aérea en < 12 á o < 40 kg.
- Pacientes se les asignó por día calendario a ventilación con bolsa autoinflable (BMV) (n=410) o BMV seguida de TET (n=420)

Sujetos y lugar del estudio

- Los Angeles county y Orange county población estimada de >12 millones con 25% de menores de 13 años, ambos con sistemas de emergencia básicos y avanzados.
- Todos los ≤ 12 años o ≤ 40 kg que fueron considerados en estudio anterior en PCR por los paramédicos y se mantenían así al llegar a ED.

Recolección de datos

- Formulario con respuestas cerradas completado por médico de emergencia y paramédico
- Investigador de llamada entrevistó a paramédico sobre el evento a través de formulario estructurado
- 2 enfermeras revisión retrospectiva sobre registros médicos, formularios, outcomes, etc...

Análisis estadístico

Stata 6.0

- variables continuas : mediana y en cuartiles y comparadas por test Willcoxon
- variables categoricas: proporciones y comparadas con χ^2

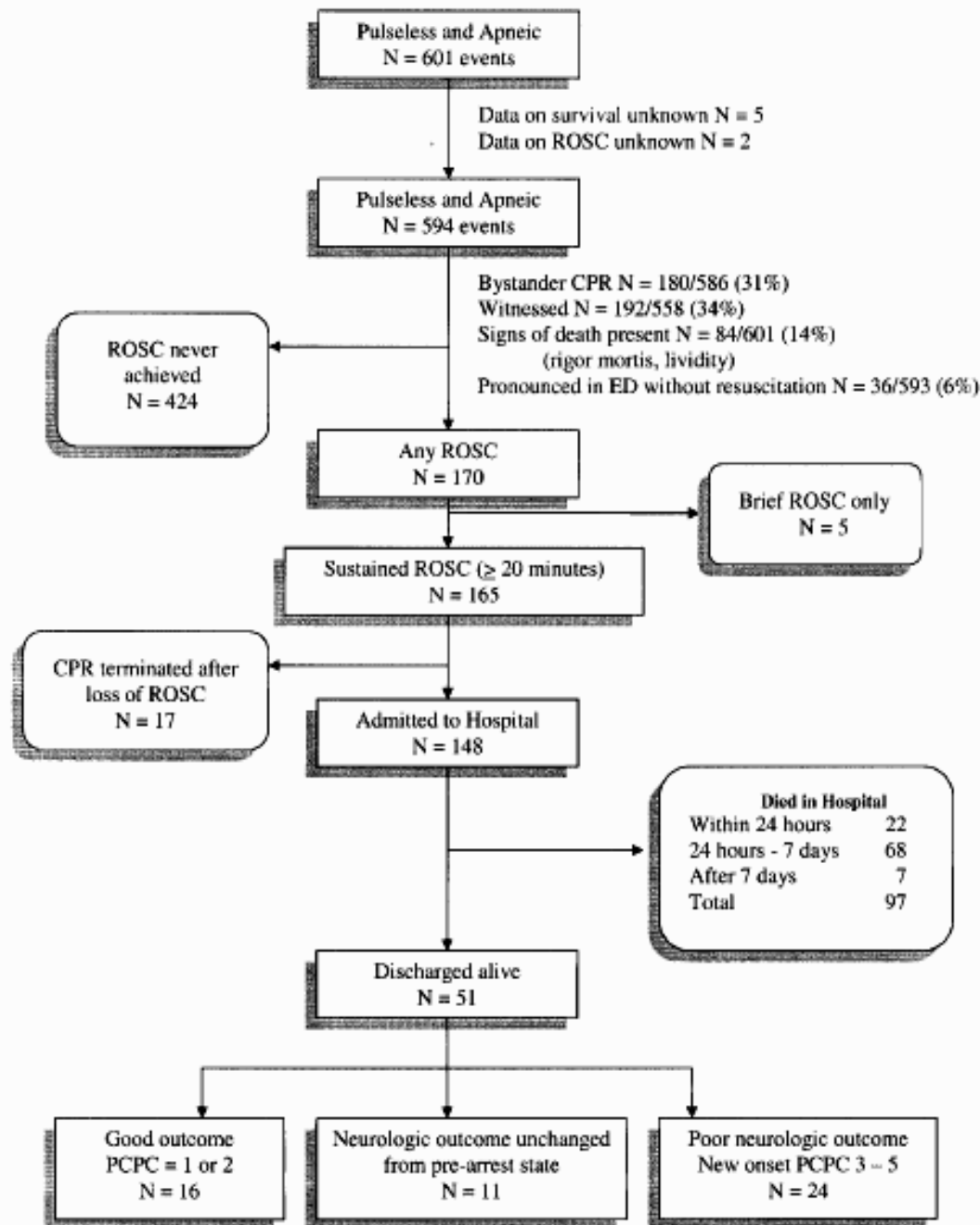


TABLE 2. Patient Characteristics

Patient Characteristic	Nonsurvivors (n = 545)	Survivors to Hospital Discharge (n = 51)	Total (n = 601)	P Value
Age category				<.0001
Neonate (0–28 days)	46/545 (8%)	13/51 (25%)	59/601 (10%)	
Newborn	20/545 (4%)	11/51 (22%)	31/601 (5%)	
Infant (29–364 days)	255/545 (47%)	10/51 (20%)	269/601 (45%)	
Toddler (1–4 years)	156/545 (29%)	24/51 (47%)	180/601 (30%)	
Child (5–12 years)	88/545 (16%)	4/51 (8%)	93/601 (15%)	
Gender				.18
Male	310/545 (57%)	34/51 (67%)	349/601 (58%)	
Ethnicity				.35
Hispanic	213/511 (42%)	24/47 (51%)	239/562 (43%)	
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African American	102/511 (20%)	5/47 (11%)	107/562 (19%)	
Asian	38/511 (7%)	5/47 (11%)	43/562 (8%)	
Other	12/511 (2%)	2/47 (4%)	14/562 (2%)	
Los Angeles County	404/545 (74%)	38/51 (75%)	446/601 (74%)	.95
Arrest location				.0056
Home/residence	337/496 (68%)	23/43 (53%)	363/543 (67%)	
Water	60/496 (12%)	12/43 (28%)	73/543 (13%)	
Road/street	48/496 (10%)	2/43 (5%)	50/543 (9%)	
Vehicle	16/496 (3%)	5/43 (12%)	21/543 (4%)	
School/daycare	14/496 (3%)	1/43 (2%)	15/543 (3%)	
Public/recreation site	11/496 (2%)	0/43	11/543 (2%)	
Work	10/496 (2%)	0/43	10/543 (2%)	
Witnessed				
By any witness	161/509 (32%)	31/49 (63%)	192/561 (34%)	<.0001
By EMS	37/509 (7%)	8/49 (16%)	45/561 (8%)	.026
Bystander CPR	164/535 (31%)	16/51 (31%)	180/590 (31%)	.96
Arrest rhythm				<.0001
Asystole	352/504 (70%)	10/40 (25%)	365/548 (67%)	
PEA	107/504 (21%)	25/40 (62%)	133/548 (24%)	
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TABLE 3. Etiologies of 601 Pediatric Out-of-Hospital Cardiac Arrests

Etiology	Etiology, <i>n</i>	Etiology, %	Survival Data Known, <i>n</i>	Survived, <i>n</i>	Survived, %	95% CI for % Survived
SIDS	136	23	136	0	0	0-3
Trauma	118	20	118	6	5	2-11
Pedestrian auto	48					
Abuse	25					
Asphyxiation	21					
Motor vehicle collision	10					
Penetrating	9					
Respiratory	96	16	95	20	21	13-31
Infectious	33					
Unspecified	19					
Reactive airways	14					
Foreign body aspiration	12					
Delivery of newborn	10					
Submersion	73	12	72	12	17	9-27
Pool	50					
Bathtub	12					
Jacuzzi/spa	4					
Lake/pond	4					
Bucket	1					
Washing machine	1					
Cardiac	48	8	48	4	8	2-20
Congenital	33					
Cardiomyopathy	6					
Myocarditis	3					
Dysrhythmia	2					
Congestive heart failure	2					
Central nervous system	35	6	35	1	3	0-15
Unspecified	22					
Infection	6					
Seizure	4					
Tumor	3					
Burn	6	1	6	0	0	0-46
Poisoning	6	1	6	1	17	0-64
Opiates	2					
Carbon Monoxide	1					
Iron	1					
Benzoates	1					
Unspecified	1					
Other	63	10	63	6	10	4-20
Prematurity	18					
Sepsis	14					
Congenital defects	11					
Dehydration	4					
Metabolic	4					
Neglect	4					
Unspecified	3					
Anaphylaxis	2					
Heat stroke	1					
Human immunodeficiency virus	1					
Malignancy	1					
Unknown	20	3	17	1	6	0-29

CI indicates confidence interval.

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Central nervous system	35	6	35	1	3	0-15
Unspecified	22					
Infection	6					
Seizure	4					
Tumor	3					
Burn	6	1	6	0	0	0-46
Poisoning	6	1	6	1	17	0-64
Opiates	2					
Carbon Monoxide	1					
Iron	1					
Benzoates	1					
Unspecified	1					
Other	63	10	63	6	10	4-20
Prematurity	18					
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Presencia de un testigo = 147

- 26% en presencia de un ciudadano
- 8% en presencia de personal de emergencia
- Sobrevida 16% vs 8,6% ($p < .00001$) a pesar de que recibieron RCP por el testigo, sólo el 28%.

Ritmo de PCR (n=548)

• Asistolia	67%	3%
• Actividad eléctrica sin pulso	24%	19%
• Fibrilación ventricular	9%	10%

FV más frecuente en:

• > de 5 años	17/87 (20%)
• con etiología cardiaca	10/47 (21%)
• con etiología de inmersión	10/72 (14%)
• paros con testigos	22/165 (13%)

¿Cómo se manejó vía aérea en sobrevivientes? (n°=51)

- 39 recibieron BMV
- 12 BMV + TET

De los que tuvieron buen outcome neurológico :

- 12 BMV
- 4 BMV+TET

Sobrevida y outcome según dosis de adrenalina

- 86% recibieron adrenalina (510/596)
- 32% (192/596) fuera del hospital
- 82% (489/596) dentro del hospital
- 49% de los sobrevivientes no requirieron epinefrina
- ningún sobreviviente con buen outcome neurológico recibió más de 3 dosis

TABLE 4. Event Intervals

Event Interval, min	Total		Total Nonsurvivors		Survivors	
	Median	(IQR)	Median	(IQR)	Median	(IQR)
Discovery interval	8	(0-60)	10	(0-60)	0	(0-4)
Call-response interval	5	(3-6)	5	(3-6)	4	(3-5)
Scene interval	9	(5-13)	9	(5-13)	10	(6-15)
Transport interval	5	(4-8)	5	(4-8)	5.5	(4-9)
Total EMS interval (response + scene + transport)	20	(16-26)	20	(15-26)	21	(16-29)
Start-stop CPR interval	36	(27-47)	36	(29-48)	16	(10-30)
Interval to CPR	10	(3-60)	13	(4-64)	3	(0-5)

Note that intervals are not generally independent: total EMS interval includes the call-response interval, scene interval, and transport interval; start-stop CPR interval may include the call-response interval, scene interval, and transport intervals; interval to CPR includes discovery interval and also includes the call-response interval in cases of CPR performed by EMS only.

Outcome neurológico de sobrevivientes (n°=51)

- 16 sobrevivientes con buen outcome neurológico (31%)
- En más de la mitad (27/51, 53%) tenían una FC > 60x' a la llegada a urgencia, de estos 20/27 tuvieron un outcome bueno

Conclusiones I

En el PCR ambulatorio pediátrico predominan:

- hombres
- menores < 1 año
- principal causa SIDS
- Pobre sobrevida: 8,6%, menor en las causas traumáticas y mejor para las respiratorias y la inmersión

Conclusiones II

- Mejor sobrevida para PCR con testigos
- Mejor sobrevida en ritmos de FV y actividad eléctrica sin pulso.
- SIDS es la etiología más frecuente, el ritmo es asistolía y tiene pobre sobrevida.
- Ningún sobreviviente que recibió más de 3 dosis de adrenalina o con más de 31 minutos sobrevivió sin secuelas importantes





PREVENCIÓN